

ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1904.

BY

COLONEL DAVID WILKIE, *M.B., I.M.S.*,

PRINCIPAL MEDICAL OFFICER AND SANITARY COMMISSIONER, ASSAM.



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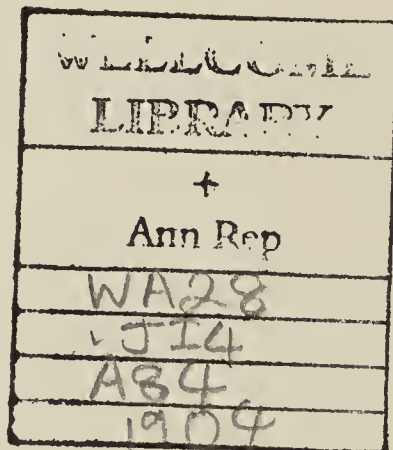
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ANNUAL
SANITARY REPORT OF THE PROVINCE OF ASSAM
FOR THE YEAR

1904.

SECTION I.
METEOROLOGY.
[See para. 2.]

SECTION II.
EUROPEAN ARMY.
[No remarks.]

SECTION III.
NATIVE ARMY.
[No remarks.]

SECTION IV.
JAILS.
[No remarks.]

SECTION V.

GENERAL POPULATION—VITAL STATISTICS.

I was Sanitary Commissioner of Assam during the year, and made the usual tour inspection.

2. The province, as a whole, received about 5·73 inches more rain than in the preceding year. All the plains districts, except Sibsagar and Lakhimpur, and all the hill districts, except the Khasi and Jaintia and the Garo Hills, participated in the increase, Cachar having the greatest redundancy, and the Garo Hills the greatest deficiency. Mean temperature was higher in the Surma Valley and in Sibsagar and Lakhimpur. Fever mortality was diminished in all the plains districts with increased rainfall, except Nowgong, and rose in the two plains districts with lessened rainfall. This is the only relation apparent between the meteorology and the disease of the year, and even it is found not to apply to the sadr stations. Notwithstanding their meteorological differences, and whatever the difference in disease detail may be, the broad fact remains that 1903 and 1904 were both healthy years. No connexion is visible between the price of food-grains and the rate of wages on the one hand, and the birth and death rates on the other.

3. The total census population of the province is 6,126,343; that of the areas under registration 5,364,718; and that of the Brahmaputra and Surma Valleys, which is used as the divisor in calculating the provincial ratios, 5,275,706. To the population of the registration area the Khasi and Jaintia Hills contribute 47,294, the Garo Hills 38,625, and the Naga Hills (Kohima only) 3,093. The non-registration area includes 477,160 in the North Cachar and Lushai Hills and the other three hill tracts, and 284,465 in the Manipur State.

Births registered.				
Province.		1893—1902.	1903.	1904.
		Birth-rate.	Birth-rate.	Birth-rate.
Assam	...	32·90	35·57	35·55
Bengal	...	38·17	39·00	42·59
Central Provinces	...	37·18	45·11	53·19
Madras	...	28·8	31·30	30·7
Burma	...	31·38	33·54	32·71
Bombay	...	30·72	31·22	35·09
United Provinces	...	42·60	46·13	46·67
Punjab	...	40·7	42·91	41·5
North-Western Province.	Frontier	31·3	31·56	34·93

4. Calculated for a total of 187,539 births, the Assam birth-rate was but slightly lower than in 1903; and like that of each of the other provinces, except Burma, was higher than the quinquennial ratio. The Assam rate is higher than in four out of the other eight provinces. The male sex only is concerned in the slight decrease of total ratio. The district ratio of Goalpara exceeded the provincial standard of 45, while the nearest approaches to the standard from below were the ratios of Sylhet and Cachar. The lowest rates were those of Lakhimpur, Kamrup, and Sibsagar. All the district birth-rates were above the lustral mean, except that of Kamrup. In no district did the death-rate exceed the birth-rate; and the greatest excesses of birth-rates over death-rates were in Goalpara and Cachar. The number of male births to 100 female for the province was 106·59, against 106·72, the ratio being, as in 1903, somewhat higher in the Brahmaputra Valley than in the Surma Valley. It was highest of all in Cachar, where it had been lowest in 1903, and lowest in Darrang.

5. The Assam death-rate was lower than in 1903, much lower than the quinquennial

Deaths registered.

Province.	1898-1902.	1903.	1904.
	Death-rate.	Death-rate.	Death-rate.
Assam	30.16	26.55	25.85
Bengal	30.92	33.33	32.45
Central Provinces ...	33.30	35.52	32.06
Madras	20.4	22.20	22.5
Burma	24.48	24.13	22.36
Bombay	42.22	43.91	41.39
United Provinces ...	30.91	40.28	34.70
Punjab	36.07	49.01	49.1
North-Western Frontier Province.	23.3	28.40	28.56

ratio, and, among the provinces, higher than the rates of Madras and Burma only. The decrease was shared by both sexes. The highest ratios were those of Darrang, Goalpara, and Nowgong; the two first being lower, and the last higher than in the preceding year. In Nowgong there was increased mortality from small-pox, fevers, bowel complaints, and "all other causes." The lowest death-rate, apparently too low, was that of Kamrup; but Sibsagar, Cachar, and Lakhimpur had all rates under 25 per mille. The ratio of male deaths to 100 female for the province was 107.01, against 107.64, the proportion, as in 1903, being highest in Kamrup (117.33)

and lowest in Cachar (99.05), and higher in the Brahmaputra Valley than in the Surma Valley. Chief among the causes of death were fevers. The total number of deaths registered in the province, excluding stillbirths, was 136,392.

6. The Local Government has issued its orders providing for the improvement of registration in the compulsory areas of the Brahmaputra Valley, and is preparing to issue orders having the same object for the Surma Valley.

Registration in compulsory areas.

Registration is compulsory only in municipalities and tea gardens. As in the previous year, the birth-rates of Sunamganj and Sibsagar as registered exceeded the estimate. That of Dibrugarh was very close to the estimate, while those of Nowgong, Golaghat, Dhubri, and Habiganj were fairly near. Very defective ratios were registered at Maulvi Bazar and Jorhat, and evidently also at Mangaldai and Hailakandi; and defect was also great at Sylhet, Gauhati, Goalpara, Silchar, and Karimganj. Omitting four towns, the total estimated birth-rate for municipal areas was 34.03, and that based on registration 27.31, a slight improvement on the figures of 1903. The inclusion of dispensary deaths affects the ratio most in the case of Mangaldai, Jorhat, and Dibrugarh, but the difference is also considerable in the case of Golaghat, Nowgong, Tezpur, Gauhati, and Dhubri. Excluding dispensary deaths, very low ratios were registered by Maulvi Bazar and Hailakandi; and low ratios by Silchar, Dhubri, Goalpara, Barpeta, and Mangaldai. The highest registered ratios, on the other hand, were those of Karimganj, Tezpur, Sunamganj, and North Lakhimpur. As well as defective registration, the healthiness of the year was a factor in the lowness of ratios. In the compulsory areas taken together, the number of male deaths to 100 female was 117.46, the maximum being 185.71 at Dhubri, and the minimum 83.87 at Golaghat. The other highest proportions were at Habiganj, Jorhat, Gauhati, and Silchar; and the other lowest at Hailakandi and Sunamganj. At Mangaldai and Sibsagar the proportion of male and female deaths was exactly equal. Of all the towns mentioned, Dhubri has in the census tables the highest ratio of male to female inhabitants; but in the case of the others no relation is observed between the proportion of male inhabitants and the proportion of male deaths. In fact in all, whether the proportion of male deaths is greater than, equal to, or less than that of female, the proportion of male inhabitants is greater than that of female inhabitants. Registration, therefore, appears to be specially defective in places such as Golaghat and Sunamganj where a preponderance of females in the mortality accompanies a very considerable preponderance of males in the population. The smaller proportion of women in these municipal areas is a reason for expecting lower birth-rates than in rural areas. As usual, Barpeta, with its excess of female inhabitants, has a very high birth-rate and a low death-rate. This peculiarity of Barpeta was discussed in last report. In Karimganj, Tezpur, and Mangaldai, according to Appendix I, the death-rate of column 10, as well as that of column 9, was greater than the registered birth-rate; while in Gauhati, Jorhat, and Dibrugarh that death-rate alone which includes the dispensary deaths was greater than the birth-rate. This state of matters appears to be due to defective registration of births.

The registered birth-rate of the tea gardens was 26.74, considerably lower than that even of the municipalities, while the death-rate was 22.01. The corresponding figures of 1903 were 28.33 and 24.06. The birth-rates in Kamrup, Nowgong, and Darrang were lowest; and only the Sibsagar tea gardens had a birth-rate higher than that of the rest of the district. The lowest death-rates were those of Kamrup, Cachar, and Sylhet; and only in Sibsagar and Lakhimpur were the death-rates of the rest of the district lower than those of the tea gardens. Darrang tea gardens were the most defective in birth

and death registration, as judged by the registration of the general population of the district. The birth-rates varied from 30·30 in Sibsagar to 18·02 in Kamrup, and the death-rates from 27·30 in Lakhimpur to 16·81 in Kamrup.

7. The question of the improvement of registration in rural areas is under the consideration of the Local Government, and orders will be issued shortly. For the rural areas, as a whole, the birth-rate was 35·68, against 35·73, and the death-rate 25·85, against 26·56. The highest birth-rate was 47·12 in Goalpara; the rates of Sylhet, Cachar, Darrang, and Nowgong were all above 34; and there was no rate lower than 28·20, which was that of Lakhimpur. The probable reason why the birth-rates in the rural areas are on the whole more satisfactory than in the compulsory areas is that in the former the proportion of females to males is greater, as may be seen in the census tables. The high death-rates of Darrang, Goalpara, and Nowgong have already been mentioned in paragraph 5. The lowest ratios were those of Kamrup and Sibsagar, but that of Cachar also was unusually low.

8. As stated in paragraph 3, a certain amount of registration is effected in some portions of the hill districts. The figures for 1904 show for a part of the Khasi and Jaintia Hills a birth-rate of 28·16 and a death-rate of 17·34, against 30·24 and 18·33; for the Garo Hills 43·83 and 25·92, against 30·45 and 23·87; and for the small town of Kohima in the Naga Hills 23·60 and 21·34, against 21·02 and 20·69. In the Khasi and Naga Hills, the birth-rate is too low, and in the latter the death-rate is too near the birth-rate. The birth-rate in the Garo Hills is considered by the Deputy Commissioner to be wrong, but he cannot explain it. Possibly, as on former occasions, items from non-registration areas may have been included.

9. The maximum months of total mortality were December, November, and October; and the minimum months March and February. Ratios of monthly mortality. It was the last quarter of the year that was most marked by mortality from cholera, bowel complaints, and fevers; while small-pox chose May—July for its chief ravages.

10. For 1904 the male and female mortalities of infants under one year (Statement

Mortality at different ages.

Province.	1904.		
	Male.	Female.	Both sexes.
Assam	200·50	193·36	197·05
Bengal	194·94	177·81	186·59
Central Provinces	224·79	205·49	215·40
Madras	192·8	173·2	181·2
Burma	214·82	166·45	191·50
Bombay	201·63	186·87	194·54
United Provinces	227·31	225·92	226·64
Punjab	224	229	226
North-Western Frontier Province.	202·89	171·83	187·23

Name of district.	Male.	Female.	Both sexes.
Cachar	170·01	167·39	168·77
Sylhet	241·34	228·28	234·98
Surma Valley	230·27	219·24	224·92
Goalpara	221·14	211·94	216·72
Kamrup	137·01	144·35	140·57
Darrang	214·21	214·16	214·19
Nowgong	174·74	172·07	173·45
Sibsagar	121·75	116·13	119·03
Lakhimpur	122·52	115·63	119·23
Brahmaputra Valley	166·78	163·86	165·37
Assam	200·50	193·36	197·05

IV) are much higher than usual, 201·19 and 179·52. The marginal tables deal with the infantile mortality, that is, the mortality calculated on the registered number of births for the year, and not on the census population under one year of age. The upper table shows that the ratio of Assam was surpassed by those of the Central Provinces, the United Provinces, and the Punjab alone. If the lower table be compared with its fellow of 1903, it will be found that Sylhet, Darrang, Nowgong, Sibsagar, and Lakhimpur all shared in the increase for each sex, and Kamrup in the female increase only. No light is thrown upon this by the district reports; and I find that though the mortality above one year of age also was increased in Nowgong, Sibsagar, and Lakhimpur, it was not so in Sylhet and Darrang. The most defective ratios are those of Sibsagar and Lakhimpur, and then those of Kamrup and Cachar. In all districts, except Kamrup, the male ratios were greater than the female, though in Darrang the difference was but slight. The proportion of males to females was only 103·69 for Assam, the extremes being 105·96 in Lakhimpur and 94·93 in Kamrup. The greatest increase of infantile mortality was in Nowgong, a district wherein small-

pox, which killed 195 children under one year of age (Statement VIII), was prevalent, as well as fevers and bowel complaints. The greatest reduction was in Goalpara. The two sexes were nearly equal in the increase in Nowgong and in the decrease in Goalpara.

In both sexes mortality was high below 5 and above 50 years of age; and in both sexes it was low between 5 and 15. At ages between 5 and 50 the greatest male mortality was from 30 to 50, and the greatest female mortality from 15 to 30. Again, the death-rate of men was greater than that of women at all ages except between 15 and 40, that is, the child-bearing period.

11. The following table shows the results of the inspection of registers of vital statistics by police officers and by Inspectors of Vaccination during the year 1904 :—

Name of district.	Investigated by police.								Investigated by Inspectors of Vaccination.							
	Number of days spent.	Number of villages examined.	Number of births looked up.	Number found unreported.	Percentage unreported.	Number of deaths looked up.	Number found unreported.	Percentage unreported.	Number of days spent.	Number of villages examined.	Number of births looked up.	Number found unreported.	Percentage unreported.	Number of deaths looked up.	Number found unreported.	Percentage unreported.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Cachar ...	361½	687	5,834	226	3·87	4,108	102	2·48	50	44	602	9	1·49	369	2	0·54
Sylhet ...	796	2,109	13,580	744	5·48	10,030	404	4·03	149	486	6,754	71	1·05	4,547	60	1·32
Goalpara...	1,828	1,880	11,466	302	2·63	8,213	155	1·89	54	63	720	3	0·42	297	2	0·68
Kamrup ...	378	571	2,997	423	14·12	1,539	376	24·43	56	58	294	80	27·21	252	23	9·13
Darrang ...	162	353	600	128	21·33	760	133	17·50	83	195	485	41	8·45	380	18	4·74
Nowgong	520	1,089	3,898	77	1·98	3,257	65	2·00	156	349	1,794	166	9·25	1,599	102	6·37
Sibsagar ...	313	700	2,096	48	2·29	1,091	17	1·56	106	115	528	113	21·40	259	57	22·01
Lakhimpur	201	485	1,235	6	0·49	878	1	0·11	27	55	174	8	4·60	77	7	9·09

As before, this table shows how defective registration is in Kamrup and Darrang. It also shows that the police were most active in this branch of work in Goalpara, Sylhet, and Nowgong; that the work done by the Inspector of Vaccination in Cachar has somewhat improved; that the Vaccination Inspectors were more successful in discovering omissions than the police in Sibsaagar, Lakhimpur, and Nowgong only, and that the highest percentage of omissions discovered was claimed by the Sibsaagar Inspector of Vaccination. The police discovered a larger percentage of omissions than in 1903, except in Kamrup, Nowgong, and Lakhimpur; the Vaccination Inspectors a smaller percentage of birth-omissions except in Cachar, Sylhet, and Nowgong, and a smaller percentage of death-omissions except in Cachar, Sylhet, Goalpara, and Sibsaagar. Out of 402 births and 421 deaths looked up in connection with 91 registers by the Civil Surgeon of Nowgong, 46 births, or 11·44 per cent., and 40 deaths, or 9·50 per cent., were found to have been unrecorded. In the case of no less than 55 villages the Vaccination Inspector of Lakhimpur reported that he could not find the mandals; and in Kamrup a similar difficulty was felt, the mandals being engaged with the settlement office; and in 13 villages of Cachar the books were not available for inspection.

SECTION VI.

GENERAL HISTORY OF THE CHIEF DISEASES.

12. Judged by the general death-rate, the health of the population of Assam was somewhat better than in 1903, and the ratio compares very favourably with that of the decennium. Though there was a decrease, as compared both with the preceding year and with the decennium, of mortality from cholera, fevers, and injuries, there was, compared with 1903, a rise in mortality from small-pox, bowel complaints, and all other causes. The rise in the newly-registered respiratory diseases may be disregarded. There was a total absence of plague mortality in 1904, and there had been none previous to 1903.

Diseases.	Total number of deaths.				Ratio per mille.	
	1892—1901.	1902.	1903.	1904.	1892—1901.	1904.
Cholera ...	17,642	12,658	8,360	5,588	3·34	1·06
Small-pox ...	3,361	6,673	1,111	1,559	0·64	0·30
Plague ...	...	...	28	...	...	...
Fevers ...	94,797	77,679	75,004	71,171	17·97	13·49
Dysentery and diarrhœa.	15,519	11,213	10,516	11,682	2·94	2·21
Respiratory diseases	...	584	445	736	*	0·14
Injuries ...	1,837	1,835	1,745	1,693	0·35	0·32
All other causes ...	38,641	42,428	42,860	43,963	7·32	8·33
All causes ...	171,797	153,070	140,069	136,392	32·56	25·85

* Not registered separately.

13. The cholera mortality ratio of the province was lower than the ratios for the

Cholera.

District.	Census population of 1901.	Death-rates from cholera.			
		1892-1901.	1902.	1903.	1904.
Cachar ...	414,781	2.98	2.09	1.34	0.53
Sylhet ...	2,241,848	2.80	3.93	1.03	1.64
Surma Valley ...	2,656,629	2.83	3.64	1.08	1.46
Goalpara ...	462,052	3.63	0.60	1.04	0.61
Kamrup ...	589,187	5.90	2.51	1.83	0.41
Darrang ...	337,313	3.64	0.73	3.76	0.77
Nowgong ...	261,160	5.50	0.08	6.73	1.39
Sibsagar ...	597,969	2.55	0.89	1.21	0.65
Lakhimpur ...	371,396	2.13	1.16	0.49	0.44
Brahmaputra Valley	2,619,077	3.87	1.14	2.10	0.65
Assam ...	5,275,706	3.34	2.40	1.58	1.06

decennium and for the year 1903, and Sylhet was the only district with a mortality higher than in the year preceding. The greatest decrease was in Nowgong, where there had been a severe epidemic in 1903, and the ratio of 1904, lowered though it was, was higher than that of 1902, and in 1904 was surpassed by that of Sylhet only. The provincial ratio is the lowest that has been seen for at least ten years. In the Sylhet district there has been an increase of cholera in the years 1900, 1902, and 1904. This Sylhet cholera of 1904 was widespread, but claimed most victims in the Sunamganj sub-division, and fewest in South Sylhet.

The Civil Surgeon animadverts upon the evil custom of poisoning the river waters with the carcasses of animals, and with the fluids from dead human bodies brought to river banks for cremation, and of washing the clothes and vessels of cholera patients in tanks from which drinking water is drawn. In Nowgong the cholera of January and February was a continuation of that of 1903; dropping cases occurred from May to September; and the disease began to be epidemic again in October. The chief incidence was in certain mauzas at or near Silghat. Form VII shows the number of circles and villages attacked. The maximum months were December and November, the former being the maximum months for Sylhet and Sibsaagar, and the latter for Kamrup, Darrang, and Nowgong.

14. The cholera mortality among tea-garden coolies was less than in the remaining population of Assam, and this holds good also of the Surma Valley only. In Lakhimpur, Sibsaagar, Darrang, and Cachar the tea-garden mortality was the greater, nearly four and a half times in Sibsaagar. The Civil Surgeons of Sibsaagar and Cachar can furnish no explanation. That of the Civil Surgeon of Lakhimpur is that infection was brought up by newly-imported coolies, but he offers no evidence in support of this.

Cholera on steamers and in riverside depôts.

Year.	Number of immigrants.	Number of deaths on steamers.	Number of deaths at depôts.	Total number of deaths.	Deaths per mille of immigrants.
1895 ...	34,801	89	119	208	6.0
1896 ...	42,384	282	411	693	16.4
1897 ...	66,952	371	750	1,121	16.7
1898 ...	33,762	26	58	84	2.5
1899 ...	24,419	21	51	72	2.9
1900 ...	44,534	177	351	528	11.9
1901 ...	22,242	18	40	58	2.6
1902 ...	24,344*	6†	17	23	0.9
1903 ...	26,808	8	36	44	1.6
1904 ...	19,591	3	6	9	0.46

* Information not available from K. mrup.

† Ditto ditto and Darrang.

15. The ratio of mortality from cholera among immigrant tea coolies in steamers and riverside depôts was lower than in any year of record. This table refers to the Brahmaputra Valley only, as no returns are sent in from the other valley, where the majority of the immigrants arrive by rail. The number of immigrants coming up the Brahmaputra was the smallest in the ten years.

16. The mortality from small-pox was higher than in last year, but lower than the

Small-pox.

District.	Census population of 1901.	Death-rates from small-pox.			
		1892-1901.	1902.	1903.	1904.
Cachar ...	414,781	0.12	2.71	1.06	0.07
Sylhet ...	2,241,848	0.38	2.34	0.15	0.01
Surma Valley ...	2,656,629	0.34	2.40	0.30	0.02
Goalpara ...	462,052	1.40	0.27	0.17	0.07
Kamrup ...	589,187	1.05	0.15	0.08	0.15
Darrang ...	337,313	0.77	0.08	0.09	0.58
Nowgong ...	261,160	1.24	0.16	0.52	3.49
Sibsagar ...	597,969	0.67	0.03	0.05	0.36
Lakhimpur ...	371,396	0.55	0.03	0.02	0.16
Brahmaputra Valley	2,619,077	0.94	0.12	0.13	0.57
Assam ...	5,275,706	0.64	1.26	0.21	0.30

decennial ratio. The increase was confined to the Brahmaputra Valley, and affected every district therein except Goalpara. Much the highest ratio was that of Nowgong, and it was the only district ratio which exceeded the decennial ratio as well as that of the previous year. It was nearly seven times higher than the ratio of 1904, and nearly three times higher than that of the decennium. The Civil Surgeon states that the disease was most prevalent among certain sections of the people, who refuse vaccination, and the same was the case in Kamrup. The Civil Surgeon of Cachar mentions the

confusion between small-pox and measles; the Civil Surgeon of Sibsagar found that deaths from measles were being returned as from small-pox, and notes that the village reporting agents knew small-pox as *ai* and measles as *horu ai* (little *ai*), and returned them together as being both *ai*; and the Civil Surgeon of Lakhimpur believes that nearly all, or probably all, the deaths attributed to small-pox were really due to measles. The low death-rate in Sylhet is attributed by the Civil Surgeon to the large number of children vaccinated in the two years preceding. When vaccination measures were taken to check the outbreak in villages of the police jurisdiction of Sutia in Darrang, resistance was offered in some cases under the belief that to have the children vaccinated would arouse the displeasure of the goddess of small-pox. There was some objection also offered by the inhabitants of the plains portion of the Garo Hills district, but in the hill tract there was no opposition, "and the majority of the people are protected." Both in Nowgong and in Darrang the highest numbers of deaths occurred in May, June, and July. In Nowgong fifty villages were affected, and in Darrang forty.

Plague.

17. No deaths from plague were returned during the year, nor were any cases observed.

18. Fever mortality was again less than in the two years preceding, and the ratio

Fevers.

District.	Census population of 1901.	Death-rates from fevers.			
		1892-1901.	1902.	1903.	1904.
Cachar ...	414,781	13.61	10.57	11.20	9.22
Sylhet ..	2,241,848	15.36	12.65	11.30	10.47
Surma Valley ...	2,656,629	15.08	12.33	11.28	10.27
Goalpara ...	462,052	29.68	27.54	28.48	26.94
Kamrup ...	589,187	21.90	16.42	16.99	14.22
Darrang ...	337,313	23.49	25.71	24.90	22.87
Nowgong ...	261,160	38.36	16.19	14.39	16.53
Sibsagar ...	597,969	11.05	9.95	9.88	11.46
Lakhimpur ...	371,396	9.56	9.19	10.20	11.23
Brahmaputra Valley ...	2,619,077	20.89	17.16	17.19	16.76
Assam ...	5,275,706	17.97	14.72	14.22	13.49

was, as before, less than that of the decennium. The only districts in which there was increased mortality, compared with the previous year, were Nowgong, Sibsagar, and Lakhimpur; and in the two latter it exceeded the decennial ratio. These two districts were the only ones with diminished rainfall and increased mean temperature. No elucidatory remarks are made by the Civil Surgeons. The highest ratios for fever mortality were those of Goalpara and Darrang, and the lowest those of Cachar and Sylhet. As the table includes *kalá-ázár*, an inspection of it shows that, however

much unrecognised *kalá-ázár* may be lurking in the villages, it is not causing an increasing general mortality. The inclusion by the reporting agents of many different states marked by pyrexia under the head fever is no doubt the reason why the seasonal distribution shown in Statement IX is not more characteristic; but in the province, as a whole, the influence of the included true malaria gives the highest numbers to the last quarter. In each of three districts actually a whole circle returned no fever deaths. It is strange that in the Sibsagar district only 32 per cent. of the villages returned mortality from fever, and that in three of the other districts the percentage was under 70, in one more under 80, while Darrang alone attained so much as 94 per cent. As in former years, in all districts, the tea gardens returned much lower ratios than the remaining population; so much so that in Assam, as a whole, the ratio of the latter was nearly four and a quarter times greater than that of the former. This may be partly due to better diagnosis in the gardens, partly to difference of diagnosis, partly to difference of environment and circumstances.

In the end of the year Major Hall was placed on special duty to examine into the alleged unhealthiness of the Balisira Valley and into the prevalence of *kalá-ázár* in South Sylhet. He reported that *kalá-ázár* occurs, though not epidemically, throughout the valley, and that malaria is very prevalent. The Local Government has adopted his suggestion that an engineer should be deputed to examine the drainage of the country, and measures are being taken to encourage the use of quinine, not only in South Sylhet, but in all parts of the province.

19. A slight increase in the dispensary cases of Kamrup and Goalpara did not prevent a great drop of the number for the province as a whole.

Kalá-ázár.

Cases of kalá-ázár and malarial fevers treated during the past ten years in the dispensaries of five districts.

District.	1895.		1896.		1897.		1898.		1899.		1900.		1901.		1902.		1903.		1904.	
	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.	<i>Kalá-ázár.</i>	Malarial fever.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Sylhet ...	...	...	...	...	...	...	...	...	...	...	...	...	1,863	46,452	2,108	40,017	547	39,268	175	36,196
Goalpara ...	24	11,082	11	13,074	...	12,036	...	10,792	...	8,372	...	10,744	14	13,085	4	11,979	4	14,696	6	15,139
Kamrup ...	801	5,494	829	8,202	747	9,162	143	9,363	96	8,505	47	7,441	19	9,060	22	8,662	14	11,071	21	10,803
Darrang ...	1,211	9,954	794	12,804	1,182	14,406	606	13,271	379	10,667	272	10,147	330	12,452	234	13,917	188	15,809	13	20,368
Nowgong ...	6,645	20,239	4,180	22,876	6,378	30,312	4,806	25,519	3,237	20,936	1,567	18,500	353	24,367	152	13,360	80	16,411	40	13,065
Total ...	8,681	46,769	5,814	56,956	8,307	65,916	5,555	58,945	3,712	48,530	1,885	46,832	2,579	105,416	2,520	87,935	833	97,255	255	95,571

Besides these, only 2 dispensary cases were reported, one in Lakhimpur and one in the Naga Hills. According to the returns, the disease appeared to be most active in the North Sylhet and Sunamganj subdivisions of the Sylhet district and in the Mangaldai subdivision of the Darrang district. The outbreak reported among the Lhota Nagas in 1903 is thought by the present district authorities not to have been *kalá-ázár*.

Deaths from kalá-ázár registered during the last ten years in five districts.

District.		1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
1		2	3	4	5	6	7	8	9	10	11
Sylhet ...	...	9	4	...	3	...	3	147	168	721	1,020
Goalpara ...	...	265	298	232	134	161	110	62	49	44	64
Kamrup ...	...	2,059	2,244	2,756	1,693	1,745	1,262	830	1,014	651	458
Darrang ...	...	2,477	2,471	3,597	4,113	4,101	279	2,446	3,391	2,657	1,611
Nowgong ...	...	11,037	10,588	12,012	10,515	8,192	4,661	2,346	1,697	960	595
Total ...	...	15,847	15,605	18,597	16,458	14,199	9,015	5,831	6,319	5,033	3,748

As no deaths were reported beyond the above five districts, the total number of deaths given in Form IX is 3,748. It has long been felt that the two tables printed year by year in this paragraph are inaccurate, but not till now has it been discovered how very inaccurate they are. During 1904 Assam was visited by Captain James, I.M.S., specially appointed by the Government of India to investigate *kalá-ázár*. One of the opinions he formed was that *kalá-ázár* is much more prevalent than is generally thought to be the case; and the Sanitary Commissioner with the Government of India, on page 96 of his report for 1903, quotes specific instances in support of this. Major Hall also, who was placed on special duty by the Local Government to inquire into the prevalence of *kalá-ázár* in South Sylhet, found that that disease, recognised by the presence of the Leishman-Donovan body, was present throughout the tract he visited, one or two cases being found in each village. In justice, however, to the village reporting agents, as well as to the medical officers, and incidentally to the two tables of this paragraph, it should be stated that the disease is no longer present as a marked epidemic, but is scattered about in the form of chronic and less strongly marked cases or of isolated cases of more acute type. Not only is the urgency of the danger of infection no longer brought home to men by their ordinary everyday observation, but, as a consequence, the disease itself has become more difficult to recognise. In fact, Captain Rogers himself acknowledges that the difficulty of distinguishing *kalá-ázár* from chronic malaria by purely clinical means, apart from splenic puncture and microscopical examination, is extreme. Major Hall, too, found chronic malaria side by side with *kalá-ázár*; and by the use of splenic puncture he was sometimes enabled to show that the inhabitants were wrong in asserting the absence of *kalá-ázár* from their village. Captain James found in several instances that a dispensary had treated very few cases of *kalá-ázár*, while he was able to recognise it in abundance in the surrounding population. But, on the other hand, Major Hall

reports that while in four dispensaries of the Habiganj subdivision 42 cases of *kalá-ázár* had been treated, not a single death from that disease appeared in the vital statistical returns of the subdivision. Captain James has not yet sent in his report officially, so that I am unable to give or comment upon his conclusions; but I may say that he found the disease intensely prevalent in some parts of Sylhet, common in Gauhati, Tezpur, and many other places in Kamrup and Darrang, present in Dhubri, probably absent in Golaghat. In July 1904, Captain Leonard Rogers, I.M.S., announced that when the Leishman-Donovan bodies were cultivated in a particular medium and at a certain temperature, a development of trypanosomes resulted. His assistant, Mr. Chatterjee, confirmed this in a paper published in January 1905, and it appears that the January and March numbers of the *Journal of the Royal Army Medical Corps* contained papers by Captain Statham, R.A.M.C., and others, and by Major Leishman and Captain Statham, who, from researches conducted at Netley, arrive at the conclusion that the Leishman bodies are a stage in the development of a flagellated organism, which, as far as the observations go, may very well prove to be a trypanosoma. On the other hand, Lieutenant Christophers (Sanitary Commissioner, India, 1903, page 129) considers that though the most advanced forms seen by him in cultivation are not essentially different from the more advanced forms seen by Captain Rogers, yet he does not feel justified in stating that they are fully developed trypanosomes, and the Sanitary Commissioner with the Government of India is of opinion that it would be "rash to form an opinion as to the exact zoological position of the parasites until further work has been done." It may be noted that Captain Leonard Rogers, in the account of his researches into the fevers of the Dinajpur district, records that the cachexial fevers (so-called malarial cachexia) were not simply divisible into Leishmanian and malarial, there being a large proportion in which neither parasite could be found; and thereby hints that there may be at least one other separate causation still to be more specifically differentiated.

20. In the province as a whole, and in each of the great valleys, dysentery and diarrhoea mortality was higher than in the preceding year. Among districts, this increase was confined to Sylhet, Goalpara, Nowgong, and Sibsagar; and Nowgong was the only district with a ratio

District.	Census population of 1901.	Death-rates from dysentery and diarrhoea.			
		1892-1901.	1902.	1903.	1904.
Cachar	414,781	3'84	2'59	2'43	2'28
Sylhet	2,241,848	2'89	1'96	1'73	1'82
Surma Valley	2,656,629	3'04	2'05	1'84	1'89
Goalpara	462,052	0'59	0'19	0'20	0'29
Kamrup	589,187	1'17	1'14	1'23	0'90
Darrang	337,313	3'66	3'06	2'77	2'63
Nowgong	261,160	2'63	1'10	1'21	4'21
Sibsagar	597,969	4'26	3'32	3'17	3'90
Lakhimpur	371,396	5'40	4'55	4'50	4'49
Brahmaputra Valley	2,619,677	2'84	2'20	2'15	2'54
Assam	5,275,706	2'94	2'13	1'99	2'21

higher than the decennial, another proof of the unhealthiness of Nowgong in 1904. Its ratio was exceeded by that only of Lakhimpur, which with that of Sibsagar usually heads the list. As usual also, the ratios of Darrang and Cachar were high. As it can be calculated from columns 3 and 4 of Form X that only 91 per cent. of registration circles and only 26 per cent. of

villages returned deaths under this head, one may infer that many deaths from dysentery and diarrhoea were unreported, and that some were returned under other heads. The monthly maximum for the province was in November, a month in which cholera was prevalent; and the Civil Surgeon of Sylhet states directly that many cases of cholera were reported as diarrhoea. In April—July a severe type of dysentery made its appearance in the town of Tezpur, and attacked children mostly, and often with a fatal result. The highest ratios for the tea-garden population were those of Lakhimpur and Sibsagar, those of Darrang and Sylhet coming next. The highest ratio for a district population, excluding the tea-garden coolies, was that of Nowgong, and this was the only district in which the ratio of the non-garden was higher than that of the garden population, about one and a half times. For the whole province the tea-garden mortality was three times that of the rest of the population; and in the districts, except Nowgong, it varied from four times to twice. As the difference in fever mortality is in the opposite direction (see paragraph 18), differing diagnosis on the part of the returning agents may have a share in the result. The whole subject was discussed in last report. The Civil Surgeon of Lakhimpur thinks that *ankylostomiasis* is much more common in gardens than among the general population, and that the dysentery returned from gardens is frequently only the terminal sign or mode of dying in *ankylostomiasis*. He mentions exposure during the plucking season as a cause of dysentery in gardens, and recalls the time when the prisoners

also were more afflicted by it, before the prohibition of extramural labour during the rains. He has observed in gardens marked improvement as regards bowel complaints following the provision of pumps and tapped cisterns for wells. He considers excessive drinking to be a predisposing cause, many cases occurring on Mondays, the day after leave day. The Civil Surgeon of Sibsagar also believes the dysentery of tea gardens to be in many cases merely the terminal event in long-continued cases of anæmia, malarial fever, *ankylostomiasis*, etc. The Sanitary Commissioner with the Government of India, on page 96 of his report for 1903, suggests it as "possible that many deaths from *kalá-ázár*, which frequently terminates with dysenteric symptoms, are returned under the heading of bowel complaints." In this passage he refers to Assam generally, and not only to the gardens.

21. The registration of respiratory diseases, only in force for three years, is still very imperfect. Sibsagar is doing best, while Nowgong, Kamrup, and Darrang reported, respectively, but 3, 4, 1, as the total of deaths.

22. The mortality ratio from injuries was well below the decennial mean both for the province and for each valley. Suicides numbered 108, persons killed by snakes and wild beasts 275, and those succumbing to wounds and accidents 1,310. Those dying from suicide, wounds and the attacks of wild beasts were in greater proportion in the Brahmaputra Valley, those dying from accidents in the Surma Valley.

Injuries.	1892—1901.	1904.
Surma Valley ...	0·38	0·37
Brahmaputra Valley	0·32	0·27
Assam ...	0·35	0·32

23. There was again a rise in the ratio of deaths registered under the head of all other causes, and the ratio was higher also than that of the decennium. Among the 43,963 deaths, 1,726 were from anæmia, 325 from *ankylostomiasis*, and 1,020 from measles and chicken-pox. Lakhimpur, and next to it Cachar, registered the highest ratio from *ankylostomiasis*, and Lakhimpur and Darrang the highest from anæmia.

SECTION VII.

VACCINATION.

[Published separately.]

SECTION VIII.

SANITARY WORKS.

24. The only large sanitary work undertaken in 1904 was the new water-works for Gauhati, a work which is being carried out by the Public Works Department. During the touring season I inspected the sanitary condition of most of the headquarters stations and subdivisional towns, and in nearly all left behind a written criticism for the information and guidance of those in charge of the local sanitation.

25. Excluding the subdivisional towns of Hailakandi, Sunamganj, Karimganj, and Maulvi Bazar, which have no separate income of their own, the aggregate actual income of the municipalities, stations, unions, and towns in Assam during the year 1904 was Rs. 2,43,392, and the expenditure on sanitary works was Rs. 1,86,953, or 69·32 per cent. of the total income, against 73·07 in the preceding year. The expenditure on direct sanitation, which excludes Rs. 57,191 spent on roads and bridges, and 9,528 on the so-called "other sanitary improvements," was Rs. 1,20,234, or 44·25 per cent. of the total income, against 43·62 the year before. Rs. 3,033 were spent on vaccination, Rs. 20,963 on drainage, Rs. 21,923 on water-supply, and Rs. 70,351 on conservancy. The municipality of Dibrugarh headed the list, having spent 69·53 per cent. on sanitation proper. Then in order came the town of North Lakhimpur and the municipalities of Nowgong and Gauhati with percentages of 66·26, 52·96, and 51·38, respectively. All the other municipal bodies spent less than half of their income, and five more than one-third. The lowest percentage (23·69) was laid out by the municipality of Goalpara. The amount spent on conservancy varied from 40·93 per cent. of the total income in urban areas of Nowgong to 22·72 in those of Darrang.

26. *Silchar Local Board*.—A sum of Rs. 3,508 was spent in constructing, improving, and repairing a number of tanks, and in improving the approach road to a bazar.

Sanitary improvements in rural areas.

Hailakandi Local Board.—As last year, nothing was spent on village sanitation.

North Sylhet Local Board devoted Rs. 1,406 to the improvement of the watersupply and of village sites, Rs. 630 to conservancy, and Rs. 137 to "other objects calculated to improve the health, safety, and comfort of the rural population."

Karimganj Local Board.—Progress was made towards the completion of the five tanks undertaken last year. Excavation of two more new tanks and repairs to others were resolved on.

South Sylhet Local Board.—An expenditure of Rs. 737 was incurred for completing 4 tanks, and for maintaining and fencing with barbed wire eight previously dug.

Habiganj Local Board expended Rs. 1,888 in excavating three tanks, reclaiming two others, and executing repairs to the other existing tanks and wells.

Sunamganj Local Board.—A sum of Rs. 2,381 was spent in raising and repairing a number of village roads and digging a tank in the Chhatak registration circle.

Dhubri Local Board.—Seven pucca wells of 4 feet diameter each were constructed at a cost of Rs. 3,486, and a further sum of Rs. 642 was laid out for the up-keep of the wells constructed during previous years.

Goalpara Local Board incurred an outlay of Rs. 1,340 for clearing jungle, executing repairs to old tanks and drains and constructing two masonry wells.

Gauhati Local Board.—Repairs were executed to a large number of pucca wells and market sheds and of a few tanks, roads, drains, and embankments at a total cost of Rs. 3,296.

Barpeta Local Board spent Rs. 1,678 in purchasing Raniganj drain pipes, sinking wells with locally made earthenware rings, improving tanks, and repairing existing wells and market sheds. A further sum of Rs. 841 was spent for improving a river channel which had silted up since the earthquake.

Tezpur Local Board.—The market sheds and the drains in the markets were repaired and, where necessary, renewed. A conservancy establishment of two sweepers was maintained to sweep market-places. All the wells under the Board, 17 in number, were also kept in repair. The total amount expended for these purposes was Rs. 2,732.

Mangaldai Local Board.—A sum of Rs. 1,485 was spent for water-supply, drainage, and market sheds.

Nowgong Local Board.—An outlay of Rs. 610 was incurred for clearing and repairing the existing wells and in cleaning up a site which had suffered much from *kálá-azár* in previous years.

Sibsagar Local Board laid out Rs. 1,618 in completing one tank, in constructing four tanks and an embankment, and in improving a drain. A further sum of Rs. 1,315 was spent in repairing 14 tanks, two wells, two drains, and four market sheds.

Forhat Local Board.—A sum of Rs. 1,305 was spent in completing the construction of two tanks and repairing the existing wells and tanks. A further outlay of Rs. 1,297 was incurred for putting up wire fencing round a *hát*, and for improving and repairing *bunds* and market sheds.

Golaghat Local Board.—The old existing tanks were kept in repair at a cost of Rs. 772.

Dibrugarh Local Board.—A number of drains and *hâts* were constructed, improved and repaired at a cost of Rs. 3,027, and a further sum of Rs. 716 was expended for the up-keep of 28 wells.

North Lakhimpur Local Board.—One pucca well and four pucca platforms were constructed and sixteen wells repaired at a total cost of Rs. 1,137.

27. Only in the Sibsaigar and Golaghat subdivisions were the sanitary books submitted regularly. Elsewhere only a few were submitted, Village sanitary inspection books. and that irregularly, or, as in Lakhimpur, none were sent in at all. In the Sylhet district hospital assistants alone submitted books.

SECTION IX.

GENERAL REMARKS.

28. In the Surma Valley 485 packages were sold in 1904, against 678 in 1903; in the Brahmaputra Valley 321, against 345; and in the Khasi and Jaintia Hills 402, against 524. In the whole province the sale decreased by 339 packages, the total being 1,208, against 1,547. A scheme for increasing the sale of quinine is being matured.

29. In the town of Maulvi Bazar a small inconclusive experiment was made on the effect of petrolage. In the town of Nowgong the so-called Mosquito brigades. “mosquito brigade” renewed its efforts, but the operations were extended to four months instead of two, and worked over a larger field, the whole town, ward by ward. Operations were begun in July, under the direction of the Civil Surgeon, with the help of a supernumerary hospital assistant and the municipal overseer. Two coolies (sweepers) with a rubbish cart, entertained by the municipality, were set to work on surface dressing; to clear away weeds and vegetation from drains and channels; to collect from private yards, when permitted, bottles, empty tins, old calabashes, and similar unconsidered vessels; to fill up small bogs, back waters, holes,

etc.; and to deepen channels and improve the flow of water. It is hoped that a trial will be given to petrolage next year. At Kohima, from the 22nd June to the end of October, a havildar of the Military Police Battalion and three prisoners from the jail were employed once a week in filling up holes, restoring retarded drainage, and clearing away rank vegetation.

30. The Assam-Bengal Railway is now open through, and coolie camps are scarce.

Railway camps.

That at Santok ghat, of over 200 coolies, was inspected by the Civil Surgeon of Sibsagar, who found the coolies

well cared for and the accommodation good.

The eastern division of the Gauhati Extension of the Eastern Bengal State Railway is under the administrative medical charge of the Civil Surgeon of the Kamrup district as chief medical officer. During 1904, only 100 coolies were employed at the headquarters, and no special sanitary arrangements were made beyond entertaining a staff of sweepers and guarding the water-supply from pollution. Other men were with survey parties and constantly on the move. Since the close of the year I have inspected the arrangements, which are now more extensive, and found that Captain MacLeod is looking after the various points of sanitation. Captain Anderson continued in administrative medical charge of the western division, on which about 6,000 coolies are employed in the cold weather. He made several inspections and improved the sanitary arrangements on the line, especially as regards water-supply, sites for building coolie huts, and arrangements for medical aid. I inspected the headquarters at Golakganj after the close of the year; and also the subdivisional headquarters at Sankos, and the line for about ten miles east of that.

The Civil Surgeon of the Khasi and Jaintia Hills and I, separately, inspected the Dwara-Tharia line and found the arrangements on the whole satisfactory.

31. In the town of Sylhet, sites for Muhammadan cemeteries were provided, and the practice, prevalent hitherto, of burying the dead in private compounds was forbidden.

Insanitary burial.

32. From May onwards measles was prevalent in many of the villages of the Naga Hills. There was an epidemic of dysentery in the village of Nankam in August—October. Both these diseases were

Naga Hills.

reported to have caused considerable mortality. In No. 13 of the Scientific Memoirs, Captain James mentions that he was unable to find the Leishman-Donovan body in Naga sores, and that he believes the causation to be different from that of Delhi boil. The present Civil Surgeon connects the Naga sore with the continual inflammation set up by the bites of a fly which at "certain seasons of the year infests certain closely-wooded tracts in the district."

33. A special enquiry is being carried out by the Civil Surgeons and Deputy Commissioners of the Garo Hills and Goalpara as to the prevalence of leprosy among Garos, but the full final reports

Leprosy.

have not yet been received. The results so far are re-assuring.

34. In compliance with paragraph 3 of Assam Secretariat memorandum No. 21 M.&S.—1970 G., dated Shillong, the 27th February 1904,

Cancer.

I give here a brief summary of the results of the inquiry as to cancer. The dispensaries returned 59 cases of cancer and sarcoma, 34 of the former and 25 of the latter. But only 29 forms have been received, 18 for cancer and 11 for sarcoma. In the former are 4 cancers of the foot, 3 cancers of the female breast, 3 of the penis, and one each of the scalp, nose, cheek, lip, tongue, gluteal region, ankle, liver; in the latter, two sarcomata of the eye (one melanotic), two of the neck (fibrosarcomata), one sarcoma each of the eyelid, temple, lower jaw (alveolar), forearm (myeloid), hand (fibrosarcoma), thigh, tibia. The age of the 10 male cancer patients varied from 75 (cancer of toe) to 20 (scirrhus at ankle), the average being 48; that of the eight female cancer patients from 60 (scirrhus of breast) to 9 (carcinoma of scalp), the average being 36; that of the eight male sarcoma patients from 56 (sarcoma of thigh) to 13 (melanotic sarcoma of the eye), the average being 39; and the three female sarcoma patients were 50 (sarcoma of eyelid), 4 (sarcoma of eye), and 4 (alveolar sarcoma of lower jaw). In the male cancer patients were a Brahman (rodent ulcer of nose), three Hindu Jogis (penis), a Patni (lip), two Chamars (ankle and cheek), one Hindu, caste unknown (little toe), one Bengali Muhammadan (liver), and one Assamese Muhammadan (gluteal region); in the female cancer patients a Bengalin, a Gua Santhalin, a Beharin (all breast), one Hindu Bengalin (heel), one Hindu Dassi (toe), a Nagani (tongue), and two Musulmanis (scalp and foot). In the male sarcoma patients were 3 Hindus, 4 Muhammadans, and one Garo; in the female, 1 Hindu Nepalin, 1 Hindu Dassi, and 1 Assamese Musulmani. Five cases of cancer (four of the foot) are stated to be of traumatic origin (leech-bite, fish-hook, etc.), and three cases of sarcoma (a blow in the case of the melanotic sarcoma of the eye). No more forms will be submitted for

1904, because the forms were not available during the whole of 1904, and records of cases seen before the distribution of the forms were not kept. Forms sent in by Hospital Assistants are not of equal value with those containing the personal experience of Civil Surgeons. Six forms, filled in from memory, have been received for other years : 1896, epithelioma of penis in an Assamese Hindu ; 1900, carcinoma of ankle in a Garo woman ; 1902, cancer of uterus in a Brahmani, epithelioma of penis in an Assamese Hindu ; 1903, cancer of penis in a Hindu Mahara, recurring keloid of ear, neck and shoulder in a Hindu. The occurrence in various years has been reported of 16 other cases for which forms cannot be filled up. Of the total cancer patients of both sexes, 76 per cent. were 40 years of age or over, and 7 per cent. under 20 ; of the sarcoma patients, 63 per cent. were 40 years of age or over, and 19 per cent. under 20.

35. On the 26th of April 1905, after my return from tour, a meeting of the Sanitary Board was held. The subjects discussed were the price and distribution of quinine, the disposal of nightsoil, and the use of village sanitary inspection books.

36. In conclusion, I desire to bear witness to the good work done by my head clerk Babu Ram Chandra Datta and my other clerks, and to thank them for the care and trouble taken in compiling the tables and figured statements attached to this report.

Shillong,
The 1st May 1905.

DAVID WILKIE, *M.B., Colonel, I.M.S.,*
Principal Medical Officer and Sanitary Commissioner, Assam.

INDEX TO STATEMENTS.

IMPERIAL.

STATEMENT NO.	I.—Showing the births registered in the province of Assam during the year 1904.
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PROVINCIAL.

[NOT PRINTED.]

Annual Form No. I.—Statement showing the Births registered

1	2			3			4		
No.	District.			Population according to the census of 1901.			Number of births registered.		
				Male.	Female.	Total.	Male.	Female.	Total.
	SURMA VALLEY.								
1	Cachar	...	...	216,806	197,975	414,781	7,976	7,181	15,157
2	Sylhet	...	...	1,141,060	1,100,788	2,241,848	43,420	41,182	84,602
	Total	...	...	1,357,866	1,298,763	2,656,629	51,396	48,363	99,759
	BRAHMAPUTRA VALLEY.								
3	Goalpara	...	...	242,685	219,367	462,052	11,183	10,338	21,521
4	Kamrup	...	...	292,869	296,318	589,187	8,970	8,445	17,415
5	Darrang	...	...	176,030	161,283	337,313	5,896	5,678	11,574
6	Nowgong	...	...	132,995	128,165	261,160	4,624	4,318	8,942
7	Sibsagar	...	...	316,985	280,984	597,969	9,191	8,594	17,785
8	Lakhimpur	...	...	199,359	172,037	371,396	5,501	5,042	10,543
	Total	...	...	1,360,923	1,258,154	2,619,077	45,365	42,415	87,780
	Total for the Province	...	...	2,718,789	2,556,917	5,275,706	96,761	90,778	187,539

Annual Form No. II.—Statement showing the Births and

1	2			3	4	5			6		7		
No.	District.			Area, in square miles.	Average population per square mile.	Population, census (1901).			Births.		Number of deaths registered.		
						Male.	Female.	Total.	Total number.	Birth-rate per 1,000 of population.	Male.	Female.	Total.
	SURMA VALLEY.												
1	Cachar	...	...	2,063	201	216,806	197,975	441,781	15,157	36.54	4,598	4,642	9,240
2	Sylhet	...	...	5,443	412	1,141,060	1,100,788	2,241,848	84,602	37.73	31,976	29,909	61,885
	Total	...	...	7,506	354	1,357,866	1,298,763	2,656,629	99,759	37.55	36,574	34,551	71,125
	BRAHMAPUTRA VALLEY.												
3	Goalpara	...	...	3,961	117	242,685	219,367	462,052	21,521	46.58	7,450	6,887	14,337
4	Kamrup	...	...	3,858	153	292,869	296,318	589,187	17,415	29.55	5,667	4,830	10,497
5	Darrang	...	...	3,418	99	176,030	161,283	337,313	11,574	34.31	5,780	5,426	11,206
6	Nowgong	...	...	3,843	68	132,995	128,165	261,160	8,942	34.23	4,054	3,816	7,870
7	Sibsagar	...	...	4,996	122	316,985	280,984	597,969	17,785	29.74	6,457	6,166	12,623
8	Lakhimpur	...	...	4,207	88	199,359	172,037	371,396	10,543	28.38	4,525	4,209	8,734
	Total	...	...	24,283	108	1,360,923	1,258,154	2,619,077	87,780	33.52	33,933	31,334	65,267
	Total for the Province ...			9,989	166	2,718,789	2,556,917	5,275,706	187,539	35.55	70,507	65,885	136,392*

* Those born dead are not included in

in the Province of Assam during the year 1904.

5			6	7	8	9		
Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
Male.	Female.	Total.				Male.	Female.	Total.
19'23	17'31	36'54	111'07	14'26	...	17'90	17'29	35'19
19'37	18'36	37'73	105'43	10'13	...	19'39	18'24	37'63
19'35	18'20	37'55	106'27	10'78	...	19'16	18'09	37'25
24'20	22'38	46'58	108'17	15'55	...	22'06	20'82	42'88
15'22	14'33	29'55	106'22	11'74	...	16'57	15'50	32'07
17'48	16'83	34'31	103'84	1'09	...	16'91	15'79	32'70
17'70	16'53	34'23	107'09	4'10	...	15'72	14'43	30'15
15'37	14'37	29'74	106'95	8'63	...	13'47	12'23	25'70
14'81	13'57	28'38	109'10	3'92	...	13'74	12'59	26'33
17'31	16'21	33'52	106'96	8'60	...	16'39	15'20	31'59
18'34	17'21	35'55	106'59	9'70	...	17'78	16'66	34'44

Deaths in the Province of Assam during the year 1904.

8	9											10		
Number of deaths of males to every 100 deaths of females.	Deaths per 1,000 of population from—											Mean ratio of deaths per 1,000 during previous five years.		
	Cholera.	Small-pox.	Plague.	Fevers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	All causes.			Male.	Female.	Total.
									Male.	Female.	Total.			
99'05	0'50	0'07	...	9'22	2'28	0'35	0'32	9'54	21'21	23'45	22'28	27'23	27'41	27'31
106'91	1'64	0'01	...	10'47	1'82	0'10	0'38	13'18	28'02	27'17	27'60	31'08	28'93	30'08
105'86	1'46	0'02	...	10'27	1'90	0'14	0'37	12'61	26'93	26'60	26'77	30'56	28'71	29'68
108'17	0'61	0'07	...	26'94	0'29	0'05	0'34	2'73	30'70	31'39	31'03	34'42	34'34	34'38
117'33	0'41	0'15	...	14'22	0'90	0'00	0'23	1'90	19'35	16'30	17'81	25'98	22'31	24'14
106'54	0'77	0'58	...	22'87	2'63	0'00	0'35	6'02	32'84	33'64	33'22	39'33	38'25	38'81
106'24	1'39	3'49	...	16'53	4'21	0'01	0'35	4'15	30'48	29'77	30'13	35'38	31'51	33'58
104'72	0'65	0'36	...	11'46	3'90	0'42	0'17	4'15	20'37	21'94	21'11	19'48	20'03	19'74
107'51	0'44	0'16	...	11'23	4'49	0'24	0'29	6'67	22'70	24'46	23'52	22'94	23'76	23'32
108'29	0'65	0'57	...	16'76	2'54	0'14	0'27	3'99	24'93	24'90	24'92	28'12	27'10	27'68
107'01	1'06	0'30	...	13'49	2'21	0'14	0'32	8'33	25'93	25'77	25'85	29'36	27'91	28'66

this or any of the other statements.

Annual Form No. III.—Deaths registered in the Province

1		2							
No.	District.				January.	February.	March.	April.	May.
	SURMA VALLEY.								
1	Cachar	...	...	...	853	610	648	663	756
2	Sylhet	...	...	...	5,528	4,307	4,195	4,178	4,367
	Total	...	...	...	6,381	4,917	4,844	4,841	5,123
	BRAHMAPUTRA VALLEY.								
3	Goalpara	...	...	...	1,221	1,163	995	1,120	1,565
4	Kamrup	...	...	...	1,007	778	709	766	986
5	Darrang	...	...	...	829	652	841	823	1,088
6	Nowgong	...	...	...	478	424	444	506	645
7	Sibsagar	...	...	...	851	659	723	853	913
8	Lakhimpur	...	...	...	646	531	490	538	644
	Total	...	...	...	5,032	4,207	4,202	4,606	5,841
	Total for the Province	...	...	...	11,413	9,124	9,046	9,447	10,964
	Ratio of deaths per month	...	...	...	2.16	1.73	1.71	1.79	2.08

Annual Form No. IV.—Deaths registered according to Age

1		2		3		4		5		6	
No.	District.	Under 1 year.		1 year and under 5.		5 and under 10.		10 and under 15.			
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	SURMA VALLEY.										
1	Cachar	...	...	1,356	1,202	518	590	183	219	167	131
2	Sylhet	...	...	10,479	9,401	3,571	3,590	1,812	1,338	1,255	975
	Total	...	...	11,835	10,603	4,089	4,180	1,995	1,557	1,422	1,106
	BRAHMAPUTRA VALLEY.										
3	Goalpara	...	...	2,473	2,191	1,069	1,070	409	383	254	209
4	Kamrup	...	...	1,229	1,219	879	790	480	364	344	235
5	Darrang	...	...	1,263	1,216	947	952	330	299	242	146
6	Nowgong	...	...	808	543	978	988	493	444	259	178
7	Sibsagar	...	...	1,119	998	1,352	1,264	474	414	262	211
8	Lakhimpur	...	...	674	583	808	847	320	249	162	136
	Total	...	...	7,566	6,950	6,033	5,911	2,506	2,153	1,523	1,115
	Total for the Province	...	...	19,401	17,553	10,122	10,091	4,501	3,710	2,945	2,221
	Ratios per 1,000 living	...	...	201.19	179.52	35.08	33.27	10.81	9.10	9.46	8.99

of Assam during each month of the year 1904.

3							4
June.	July.	August.	September.	October.	November.	December.	Total deaths registered during the year.
742 4,360	746 3,888	707 4,178	782 4,584	774 5,751	897 7,151	1,062 9,397	9,240 61,885
5,102	4,634	4,885	5,366	6,525	8,048	10,459	71,125
1,194 941 1,146 802 1,117 798	1,056 913 1,046 911 1,307 757	1,140 742 1,069 821 1,313 896	1,086 838 977 660 1,227 1,027	1,190 817 1,003 713 1,359 905	1,324 1,174 1,001 779 1,201 847	1,283 826 831 687 1,100 655	14,337 10,497 11,206 7,870 12,623 8,734
5,898	5,990	5,981	5,815	5,987	6,326	5,382	65,267
11,000	10,624	10,866	11,181	12,512	14,374	15,841	136,392
2'09	2'02	2'06	2'12	2'37	2'72	3'00	25'85

in the Province of Assam during the year 1904.

7		8		9		10		11		12	
15 and under 20.		20 and under 30.		30 and under 40.		40 and under 50.		50 and under 60.		60 and upwards.	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
145 1,249	346 2,158	442 3,057	789 4,604	554 3,022	500 2,262	406 2,000	249 1,179	272 1,789	222 1,336	555 3,742	394 3,066
1,394	2,504	3,499	5,393	3,576	2,762	2,406	1,428	2,061	1,558	4,297	3,460
229 234 182 145 218 137	360 250 252 171 327 267	584 488 556 301 601 660	727 503 803 380 1,027 910	624 576 790 351 726 761	534 447 711 293 736 577	529 537 654 300 643 476	351 383 419 226 474 304	473 489 518 229 622 341	431 345 401 212 410 198	806 411 298 190 440 186	631 294 227 181 305 138
1,145	1,627	3,190	4,350	3,828	3,298	3,139	2,157	2,672	1,997	2,331	1,776
2,539	4,131	6,689	9,743	7,404	6,060	5,545	3,585	4,733	3,555	6,628	5,236
12'47	18'40	14'24	19'02	17'01	17'58	21'58	17'83	33'93	29'92	65'40	52'71

Annual Form No. V.—Deaths registered according to Classes

1	2				3				
No.	District.				Population according to census of 1901.				
					Muhammad-ans.	Hindus.	Christians.	Other classes.	Total.
	SURMA VALLEY.								
1	Cachar	...	...	...	126,698	278,964	957	8,162	414,781
2	Sylhet	...	...	...	1,180,324	1,049,248	744	11,532	2,241,848
	Total	...	...	...	1,307,022	1,328,212	1,701	19,694	2,656,629
	BRAHMAPUTRA VALLEY.								
3	Goalpara	...	...	...	128,388	203,696	3,495	126,473	462,052
4	Kamrup	...	...	...	53,701	407,363	1,479	126,644	589,187
5	Darrang	...	...	...	17,372	239,318	1,358	79,265	337,313
6	Nowgong	...	...	...	12,578	167,709	593	80,280	261,160
7	Sibsagar	...	...	...	24,878	529,480	2,489	41,122	597,969
8	Lakhimpur	...	...	...	11,925	333,484	3,112	22,875	371,396
	Total	...	...	...	248,842	1,881,050	12,526	476,659	2,619,077
	Total for the Province	...	...	...	1,555,864	3,209,262	14,227	496,353	5,275,706

Annual Form No. VI.—Deaths registered from different Causes in the

1	2			3	4	5	6	7	8	9	In	
No.	District and town.			Population according to census of 1901.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Suicide.	
											Male.	Female.
	A.—DISTRICTS.											
	SURMA VALLEY.											
1	Cachar	...	...	404,187	197	31	...	3,795	912	143	6	5
2	Sylhet	...	...	2,211,016	3,606	26	...	23,189	4,023	210	22	12
	Total	...	...	2,615,203	3,803	57	...	26,984	4,935	353	28	17
	BRAHMAPUTRA VALLEY.											
3	Goalpara	...	...	452,028	276	33	...	12,346	108	22	1	3
4	Kamrup	...	...	566,710	232	89	...	8,047	446	2	8	8
5	Darrang	...	...	331,555	248	180	...	7,654	866	1	11	5
6	Nowgong	...	...	256,730	362	911	...	4,251	1,078	4	7	1
7	Sibsagar	...	...	586,999	366	213	...	6,713	2,292	250	3	2
8	Lakhimpur	...	...	358,671	160	60	...	3,982	1,552	78	12	...
	Total	...	...	2,552,693	1,644	1,486	...	42,993	6,342	357	42	19
	Total of Districts carried over	...	...	5,167,896	5,447	1,543	...	69,977	11,277	710	70	36

in the Province of Assam during the year 1904.

4					5				
Number of deaths registered.					Ratio of deaths per 1,000 of population.				
Muhammad-ans,	Hindus.	Christians.	Other classes.	Total.	Muhammad-ans.	Hindus.	Christians.	Other classes.	Total.
3,080 34,637	5,143 26,119	4 5	1,013 1,124	9,240 61,885	24·30 29·35	18·44 24·89	4·18 6·72	124·11 97·47	22·28 27·60
37,717	31,262	9	2,137	71,125	28·86	23·54	5·29	108·51	26·77
3 479 894 401 374 438 204	5,781 7,235 6,104 4,697 10,049 7,292	81 37 20 25 33 37	4,996 2,331 4,681 2,774 2,103 1,201	14,337 10,497 11,206 7,870 12,623 8,734	27·10 16·65 23·08 29·73 17·60 17·11	28·38 17·71 25·51 28·01 18·98 21·87	23·18 25·02 14·73 42·16 13·26 11·89	39·50 18·40 59·06 34·55 51·14 52·50	31·03 17·81 33·22 30·13 21·11 23·52
5,790	41,158	233	18,086	65,267	23·27	21·88	18·60	37·94	24·92
43,507	72,420	242	20,223	136,392	27·96	22·57	16·01	40·74	25·85

Districts and Towns of the Province of Assam during the year 1904.

10			11	12	13									
Injuries.			All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.									
Wounding or accident.	Snake-bite or killed by wild beasts.	Total.			Cholera.	Smal.-pox.	Plag e.	Fevers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.	
													For the year.	Mean of previous five years.
101	17	129	3,840	9,047	0·49	0·08	...	9·39	2·25	0·35	0·31	9·50	22·37	27·40
721	83	838	29,213	61,105	1·63	0·01	...	10·49	1·82	0·09	0·38	13·22	27·64	30·08
822	100	967	33,053	70,152	1·45	0·02	...	10·32	1·89	0·14	0·37	12·64	26·83	29·67
100	45	149	1,193	14,127	0·61	0·07	...	27·31	0·24	0·05	0·33	2·63	31·24	34·42
79	38	133	1,032	9,981	0·41	0·16	...	14·20	0·79	0·00	0·23	1·82	17·61	23·87
68	34	118	1,922	10,989	0·75	0·54	...	23·08	2·61	0·00	0·36	5·81	33·15	38·77
51	28	87	1,052	7,745	1·41	3·55	...	16·56	4·20	0·02	0·34	4·09	30·17	33·55
77	14	96	2,375	12,305	0·62	0·36	...	11·44	3·90	0·43	0·16	4·05	20·96	19·56
78	12	102	2,377	8,311	0·44	0·17	...	11·10	4·33	0·22	0·28	6·63	23·17	22·92
453	171	685	9,951	63,458	0·64	0·58	...	16·84	2·49	0·14	0·27	3·90	24·86	27·52
1,275	271	1,652	43,004	133,610	1·05	0·30	...	13·54	2·18	0·14	0·32	8·32	25·85	28·75

Annual Form No. VI.—Deaths registered from different Causes in the

1	2	3	4	5	6	7	8	9		
No.	District and town.	Population according to census of 1901.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	In	
									Suicide.	
									Male.	Female.
	Brought forward	5,167,896	5,447	1,534	...	69,977	11,277	710	70	36
	B.—TOWNS. SURMA VALLEY.									
1	Silchar, district Cachar	9,256	9	...	...	25	31	2	...	...
2	Hailakandi, " "	1,338	2	...	...	2	2	...	...	...
3	Sylhet, " Sylhet	13,893	21	...	...	135	35	12	...	...
4	Karimganj, " "	5,692	32	...	...	56	15	...	...	...
5	Maulvi Bazar, " "	2,481	...	...	...	13	3	...	...	...
6	Habiganj, " "	5,236	11	...	...	47	10	...	...	...
7	Sunamganj, " "	3,530	13	...	...	27	1	...	...	...
	Total	41,426	88	...	...	305	97	14	...	...
	BRAHMAPUTRA VALLEY.									
8	Dhubri, district Goalpara	3,737	5	...	...	32	14	...	...	...
9	Goalpara, " "	6,287	2	...	...	72	13	...	...	...
10	Gauhati, " Kamrup	11,661	9	...	...	187	58	1	1	...
11	Barpeta, " "	10,816	...	...	...	145	24	...	...	...
12	Tezpur, " Darrang	5,047	11	15	...	52	17	...	...	...
13	Mangaldai, " "	711	...	...	...	7	5	...	...	...
14	Nowgong, " Nowgong	4,430	2	1	...	65	21	...	...	1
15	Sibsagar, " Sibsaagar	5,712	20	...	...	55	16	...	...	...
16	Jorhat, " "	2,899	...	...	...	36	21	...	...	...
17	Golaghat, " "	2,359	1	...	...	48	5	...	...	...
18	Dibrugarh, " Lakhimpur	11,227	3	...	...	160	101	10	...	...
19	North Lakhimpur, district "	1,498	...	...	...	30	13	1	...	...
	Total	66,384	53	16	...	889	308	12	1	1
	Total of Towns	107,810	141	16	...	1,194	405	26	1	1
	Total for the Province	5,275,706	5,588	1,559	...	71,171*	11,682	736	71	37

* Includes 3,748 deaths

† Includes 1,726 deaths from anæmia, 325 from *ankylostomiasis*,

Annual Form No. VII.—Deaths registered from Cholera

1	2			3		4							
No.	District.			Circles of registration.		Villages.							
				Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.						
	SURMA VALLEY.												
1	Cachar	...	...	8	7	378	34	1	5	13	10	33	
2	Sylhet	...	...	22	21	8,703	869	58	8	80	219	107	
	Total	...	...	30	28	9,081	903	59	13	93	229	140	
	BRAHMAPUTRA VALLEY.												
3	Goalpara	...	...	22	14	1,461	38	16	28	37	60	75	
4	Kamrup	...	...	9	7	1,718	48	5	10	8	5	24	
5	Darrang	...	...	12	7	1,276	42	3	8	30	28	31	
6	Nowgong	...	...	7	4	1,117	47	57	2	...	...	7	
7	Sibsagar	...	...	12	4	2,109	64	3	2	15	16	15	
8	Lakhimpur	...	...	6	4	1,123	152	6	6	6	13	35	
	Total	...	...	68	40	8,804	391	90	56	96	122	187	
	Total for the Province			98	68	17,885	1,294	149	69	189	351	327	

Districts and Towns of the Province of Assam during the year 1904—concluded.

10			11	12	13									
Injuries.			All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.									
Wounding or accident.	Snake-bite or killed by wild beasts.	Total.			Cholera.	Small-pox.	Plague.	Fevers.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.	
													For the year.	Mean of previous five years.
1,275	271	1,652	43,004	133,610	1·05	0·30	...	13·54	2·18	0·14	0·32	8·32	25·85	28·75
3	...	3	106	176	0·97	...	...	2·70	3·35	0·22	0·32	11·45	19·01	25·09
...	...	...	11	17	1·49	...	...	1·49	1·49	...	...	8·23	12·70	17·96
1	1	2	138	343	1·51	...	...	9·72	2·52	0·87	0·14	9·93	24·69	38·99
1	...	1	72	176	5·62	...	...	9·84	2·63	...	0·18	12·65	30·92	27·27
1	...	1	9	26	...	...	...	5·24	1·21	...	0·40	3·63	10·48	19·02
4	...	4	65	137	2·10	...	...	8·98	1·91	...	0·76	12·41	26·16	22·61
2	...	2	55	98	3·68	...	...	7·65	0·28	...	0·05	15·58	27·76	21·87
12	1	13	456	973	2·13	...	...	7·36	2·34	0·34	0·31	11·01	23·49	28·86
5	...	5	32	88	1·34	...	...	8·56	3·75	...	1·34	8·56	23·55	42·01
1	...	1	34	122	0·32	...	...	11·45	2·07	...	0·16	5·41	19·41	26·98
1	...	2	81	338	0·77	...	...	16·04	4·97	0·09	0·17	6·95	28·99	35·81
1	...	1	8	178	...	...	...	13·41	2·22	...	0·09	0·74	16·46	26·15
2	...	2	93	190	2·18	2·97	...	10·30	3·37	...	0·40	18·43	37·65	42·01
...	...	...	15	27	...	...	...	9·85	7·03	...	...	21·10	37·98	37·97
2	2	5	31	125	0·45	0·23	...	14·67	4·74	...	1·13	7·00	28·22	35·71
1	...	1	46	138	3·50	...	..	9·63	2·80	...	0·18	8·05	24·16	20·73
1	...	1	41	99	...	...	...	12·42	7·24	...	0·34	14·15	34·15	30·84
2	1	3	24	81	0·42	...	...	20·35	2·12	...	1·27	10·17	34·33	50·19
6	...	6	96	376	0·27	...	...	14·25	9·00	0·89	0·53	8·55	33·49	33·04
1	...	1	2	47	...	...	...	20·03	8·68	0·67	0·67	1·33	31·38	44·46
23	3	28	503	1,809	0·80	0·24	...	13·39	4·64	0·18	0·42	7·58	27·25	32·97
35	4	41	959	2,782	1·31	0·14	...	11·08	3·75	0·24	0·38	8·90	25·80	31·38
1,310	275	1,693	43,963†	136,392	1·06	0·30	...	13·49	2·21	0·14	0·32	8·33	25·85	28·66

from kala-azar.
and 1,020 from measles and chicken-pox.

in the Province of Assam during each month of the year 1904.

5							6			7			8
June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.
							Male.	Female.	Total.	Male.	Female.	Total.	
21	16	9	38	36	4	22	124	84	208	0·57	0·42	0·50	2·10
192	110	69	44	87	922	1,787	1,872	1,811	3,683	1·64	1·64	1·64	1·98
213	126	78	82	123	926	1,809	1,996	1,895	3,891	1·47	1·46	1·46	2·00
32	6	...	...	3	16	10	128	155	283	0·54	0·72	0·61	1·88
36	5	16	7	2	74	49	135	106	241	0·46	0·36	0·41	3·36
19	27	8	16	35	51	3	147	112	259	0·83	0·69	0·77	3·33
4	4	5	2	80	145	58	185	179	364	1·38	1·40	1·39	6·70
43	29	30	32	42	67	93	189	198	387	0·60	0·70	0·65	1·07
22	22	11	10	22	6	4	77	86	163	0·39	0·50	0·44	1·30
156	93	70	67	184	359	217	861	836	1,697	0·63	0·66	0·65	2·60
369	219	148	149	307	1,285	2,026	2,857	2,731	5,588	1·05	1·07	1·06	2·30

Annual Form No. VIII.—Deaths registered from Small-pox in

1	2			3		4						
No.	District.			Circles of registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.					
	SURMA VALLEY.											
1	Cachar	...	...	8	3	378	6	4	1	4	7	9
2	Sylhet	...	...	22	10	8,703	22	1	1	2	2	8
	Total	...	...	30	13	9,081	28	5	2	6	9	17
	BRAHMAPUTRA VALLEY.											
3	Goalpara	...	...	22	8	1,461	11	4	8	2	1	2
4	Kamrup	...	...	9	5	1,718	31	1	8	...	1	15
5	Darrang	...	...	12	9	1,276	40	9	10	17	14	35
6	Nowgong	...	...	7	5	1,117	50	23	21	58	81	150
7	Sibsagar	...	...	12	7	2,109	35	1	...	2	32	49
8	Lakhimpur	...	...	6	3	1,123	5	...	...	...	...	...
	Total	...	...	68	37	8,804	172	38	47	79	129	251
	Total for the Province	...	...	98	50	17,885	200	43	49	85	138	268

Annual Form No. IX.—Deaths registered from Fevers in the

1	2			3		4						
No.	District.			Circles of registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.					
	SURMA VALLEY.											
1	Cachar	...	...	8	8	378	285	328	243	223	261	321
2	Sylhet	...	...	22	21	8,703	6,065	2,003	1,614	1,583	1,641	2,017
	Total	...	...	30	29	9,081	6,350	2,331	1,857	1,806	1,902	2,338
	BRAHMAPUTRA VALLEY.											
3	Goalpara	...	...	22	22	1,461	1,180	1,089	1,027	852	939	1,294
4	Kamrup	...	...	9	8	1,718	1,392	848	628	578	645	794
5	Darrang	...	...	12	12	1,276	1,197	593	460	591	611	811
6	Nowgong	...	...	7	6	1,117	641	271	303	278	303	303
7	Sibsagar	...	...	12	12	2,109	661	480	394	406	491	494
8	Lakhimpur	...	...	6	6	1,123	694	297	280	244	271	284
	Total	...	...	68	66	8,804	5,765	3,578	3,092	2,949	3,260	4,007
	Total for the Province	...	...	98	95	17,885	12,115	5,909	4,949	4,755	5,162	6,345

* Includes 3,748

the Province of Assam during each month of the year 1904.

5							6			7		8			9
June.	July.	August.	September.	October.	November.	December.	Total.			Number of these deaths among children.		Total ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.
							Male.	Female.	Total.	Under 1 year.	1 to 10 years.	Male.	Female.	Total.	
3	2	1	...	...	...	...	23	8	31	2	17	0'10	0'04	0'07	0'80
2	...	...	...	...	8	2	15	11	26	6	11	0'01	0'01	0'01	0'79
5	2	1	...	...	8	2	38	19	57	8	28	0'03	0'01	0'02	0'79
1	2	2	6	3	1	1	15	18	33	2	15	0'06	0'09	0'07	0'20
1	1	4	2	7	14	35	52	37	89	25	43	0'18	0'12	0'15	0'15
30	48	16	8	2	6	...	114	81	195	32	102	0'65	0'50	0'58	0'86
201	188	114	31	22	6	17	451	461	912	195	608	3'39	3'60	3'49	0'22
43	31	14	11	6	14	10	97	116	213	48	141	0'31	0'41	0'36	0'05
3	30	17	6	2	...	2	31	29	60	12	28	0'15	0'17	0'16	0'09
279	300	167	64	42	41	65	760	742	1,502	314	937	0'56	0'59	0'57	0'23
284	302	168	64	42	49	67	798	761	1,559	322	965	0'29	0'30	0'30	0'51

Province of Assam during each month of the year 1904.

5							6			7			8
June.	July.	August.	September.	October.	November.	December.	Total.			Total ratio of deaths per 1,000 of population.			Mean ratio per 1,000 for previous five years.
							Male.	Female.	Total.	Male.	Female.	Total.	
332 1,879	321 1,815	301 1,955	338 2,006	307 2,236	363 2,193	484 2,525	1,894 12,511	1,928 10,956	3,822 23,467	8'73 10'96	9'74 9'95	9'22 10'47	11'23 12'85
2,211	2,136	2,256	2,344	2,543	2,556	3,009	14,405	12,884	27,289	10'61	9'92	10'27	12'60
1,063 753 727 343 553 354	943 776 654 472 721 329	1,008 585 700 383 689 419	924 663 630 412 658 508	1,042 593 648 385 748 434	1,122 889 673 423 639 448	1,147 627 615 413 579 304	6,478 4,530 3,988 2,276 3,599 2,227	5,972 3,849 3,725 2,040 3,253 1,945	12,450 8,379 7,713 4,316 6,852 4,172	26'69 15'47 22'65 17'11 11'35 11'17	27'22 12'99 23'10 15'92 11'58 11'30	26'94 14'22 22'87 16'53 11'46 11'23	28'64 16'87 24'73 21'63 10'61 10'20
3,793	3,895	3,784	3,795	3,850	4,194	3,685	23,098	20,784	43,882	16'97	16'52	16'76	18'07
6,004	6,031	6,040	6,139	6,393	6,750	6,694	37,503	33,668	71,171*	13'79	13'17	13'49	15'32

deaths from kalá-ázár.

Annual Form No. X.—Deaths registered from Dysentery and Diarrhoea

1	2			3		4						
No.	District.			Circles of registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.					
	SURMA VALLEY.											
1	Cachar	...	...	8	7	378	159	68	44	42	83	68
2	Sylhet	...	...	22	21	8,703	2,434	413	230	271	257	218
	Total	...	...	30	28	9,081	2,593	481	274	313	340	286
	BRAHMAPUTRA VALLEY.											
3	Goalpara	...	...	22	18	1,461	39	12	6	2	9	16
4	Kamrup	...	...	9	8	1,718	454	34	24	38	37	43
5	Darrang	...	...	12	12	1,276	245	38	29	37	35	73
6	Nowgong	...	...	7	6	1,117	320	8	17	30	42	87
7	Sibsagar	...	...	12	11	2,109	344	137	103	118	124	157
8	Lakhimpur	...	...	6	6	1,123	581	96	58	76	83	110
	Total	...	...	68	61	8,804	1,983	325	237	301	330	486
	Total for the Province	...	...	98	89	17,885	4,576	806	511	614	670	772

in the Province of Assam during each month of the year 1904.

5							6			7			8
June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 for previous five years.
							Male.	Female.	Total.	Male.	Female.	Total.	
80	93	80	94	87	106	100	471	474	945	2.17	2.39	2.28	2.75
219	237	242	327	393	603	677	2,177	1,910	4,087	1.91	1.73	1.82	2.08
299	330	322	421	480	709	777	2,648	2,384	5,032	1.95	1.84	1.89	2.18
13	17	15	8	16	13	8	83	52	135	0.34	0.24	0.29	0.27
66	56	45	63	48	42	32	314	214	528	1.07	0.72	0.90	1.13
98	118	104	141	78	83	54	485	403	888	2.76	2.49	2.63	3.71
187	159	209	122	90	99	49	563	556	1,099	4.23	4.18	4.21	1.44
238	239	259	269	275	243	172	1,247	1,087	2,334	3.93	3.87	3.90	3.85
164	181	199	208	209	160	122	879	787	1,666	4.41	4.57	4.49	5.03
766	770	831	811	716	640	437	3,571	3,079	6,650	2.62	2.45	2.54	2.52
1,065	1,100	1,153	1,232	1,196	1,349	1,214	6,219	5,463	11,682	2.29	2.14	2.21	2.35

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Resolution on the Sanitary Report of Assam for 1904.

Extract from the Proceedings of the Chief Commissioner of Assam in the General Department, No. 5170G., dated Shillong, the 29th June 1905.

READ—

The Sanitary Report of the Province of Assam for 1904.

R E S O L U T I O N.

THE year 1904 was healthy, and in the areas under registration, which contain 87·5 per cent. of the provincial population, the recorded death-rate was 25·85 per mille, against 26·55 in 1903 and 30·16 in the five years ending 1902. Madras and Burma were the only two provinces in India which recorded a smaller death-rate. Some relation is traceable between mortality from fever in different districts and the extent of the local rainfall, but the Chief Commissioner thinks that the Sanitary Commissioner has rightly abstained from laying too much stress upon this connection. The registered birth-rate (35·55 per mille) was practically the same as in 1903, but was higher than the quinquennial ratio. The birth-rate exceeded the death-rate in all districts. In the Mangaldai subdivision, where kalá-ázár has for many years been prevalent, births balanced deaths for the first time during the past 20 years.

2. The defectiveness of registration in Assam, especially in towns, has been commented on frequently. Important modifications of the existing system, both in urban and in rural areas, are in course of being introduced or are under consideration, and the Chief Commissioner trusts that these reforms will provide some remedy for present defects. In urban areas in the Assam Valley instructions were issued in December last directing that registration should in future be effected by special gaonburas, each in charge of a particular area, and remunerated by an annual remission of municipal taxes up to a maximum of Rs. 8. The employment of subordinate police agency for the checking of registers has been abandoned, the duty being imposed on the Sub-Deputy Collector at headquarters, or, where this agency is not available, on some other official unconnected with the municipal authority. Changes in the Surma Valley towns are at present under consideration. In rural areas in the Assam Valley the Chief Commissioner has proposed to transfer the registration of the statistics reported by the gaonburas from mandals to mauzadars and tahsildars, and to require gaonburas to maintain village periodic totals, in lieu of the present system of making verbal reports. On these proposals the views of the Commissioner, Assam Valley Districts, and District Officers have been received, and the whole subject is now under the consideration of the Chief Commissioner. It is not unreasonable to suppose that the privileges that have been conceded to gaonburas will result in a substantial improvement in the reporting agency, if that agency be properly utilized and suitable arrangements be made for recording its reports.

No change will probably be made in the three districts of Sylhet, Cachar, and Goalpara, where initial registration is carried out by chaukidars.

3. The registered birth-rate in towns was 29·30 per mille, compared with 28·24 in 1903, and the death-rate 25·80, against 26·17. In Maulvi Bazar, where no prosecutions were instituted, registration was extremely bad, and it was also defective in Jorhat, Mangaldai, and Hailakandi. In the 19 towns of the province, 79 persons were prosecuted, of whom 66 were convicted.

In tea gardens, where registration is also compulsory, the recorded birth-rate fell from 28·33 per mille to 26·74 and the death-rate from 24·06 to 22·01.

In rural areas the birth-rate was 35·68, or about the same as in 1903. Registration of births in rural areas appears to be more complete than in compulsory areas, but, as pointed out by the Sanitary Commissioner, this is probably due to the fact that the proportion of females to males is greater in rural areas than in towns. The recorded death-rate was 25·85, against 26·56, which is obviously much below the truth. But in view of the impending changes in the machinery of registration, the Chief Commissioner does not consider that any useful purpose would be served by discussing the accuracy of the returns.

The amount of inspection performed by police officers and Inspectors of Vaccination is less satisfactory than in 1903. In that year 34 per cent. of the registered births and deaths were inquired into on the spot: the percentage of unreported births being 5·1 and of deaths 4·7. In 1904, the same agency inspected only 28 per cent. of the registered births and deaths, the percentage of unreported cases being 4·6 and 4·0, respectively. That the check exercised was incomplete is evidenced by the result of some valuable inspection made by Dr. Bancroft, Civil Surgeon of Nowgong, who personally tested 91 registers. He found that 11·4 per cent. of the births and 9·5 per cent. of the deaths had not been reported. The percentages of unreported cases brought to notice by the police and vaccination staff in this district were only 4·3 and 3·4, respectively. The Civil Surgeons of other districts also, it is understood, inspected village registers, but the results of these inspections are not referred to in the report. The Chief Commissioner would be glad if in future more detailed information is given on this point. Whatever be the machinery employed for registration, it will be ineffective unless its working is subjected to check on the part of the Civil Surgeon of the district.

4. *General history of the chief diseases.*—The mortality from cholera, fever, and injuries was less than in the preceding year, while deaths from small-pox, bowel-complaints, and all other causes showed an increase. The death-rate from cholera, 1·06 per thousand, was the lowest registered for many years. In the Sylhet and Nowgong districts, where a severe type prevailed, the ratios were 1·64 and 1·39, respectively, the Sunamganj subdivision having suffered severely. The death-rate from cholera (0·46 per mille) among immigrant tea coolies on steamers and at riverside depôts was the lowest on record, but this result is discounted to some extent by the fact that fewer coolies came up the Brahmaputra in 1904 than in any year during the previous decade. The provincial ratio of mortality from small-pox was 0·30. Sylhet was singularly free from the disease, and so also was Cachar. The disease prevailed in epidemic form only in the Nowgong district, where much opposition to vaccination is said to be shown by certain sections of the people. Of the total number of 1,559 deaths recorded, no less than 912 took place in the Nowgong district alone, where the high ratio of 3·49 per thousand is recorded. The Vaccination Report for 1904-1905 shows, however, that, while 29·5 per cent. of the population of the Nowgong district were protected by vaccination during the seven years ending 1904-1905, the protection afforded in Sylhet was identical, and in Cachar less (23 per cent.). In some districts deaths from measles were returned as deaths from small-pox, and it is possible that this may have happened also to some extent in Nowgong.

The mortality from fevers, including deaths from kalá-ázár, has been steadily decreasing year by year, the ratio for the province being 13·49, compared with 14·22 in 1903, 14·72 in 1902, and 17·97 for the decade ending 1901. During the year 1904 deaths from fever were highest in Goalpara, but in this district registration is perhaps more accurate than elsewhere. Fever was more prevalent in the Brahmaputra Valley than in the Surma Valley, the death-rates being 16·76 and 10·27, respectively. In the former the rainfall is on the average from 20 to 30 inches less than in the Surma Valley, and a lower temperature prevails. It is noteworthy that in Sylhet, where kalá-ázár has obtained a footing, the death-rate from fever was only 10·47. Major Hall, Civil Surgeon of Sylhet, was deputed to enquire into the alleged unhealthiness of the Balisira Valley and the prevalence of kalá-ázár in South Sylhet. As a result of his report the Chief Commissioner directed that an Engineer should be deputed to examine the drainage of the country, and that quinine should be distributed freely, free of charge, if necessary. Though the deaths recorded from kalá-ázár for the province show a steady decline, the investigations of Major Hall and of Captain James, I.M.S., who was specially deputed to Assam in 1904 by the Government of India, show that the disease is more prevalent than the returns indicate. Major Hall found that the disease, recognised by the presence of peculiar organisms, was present throughout the South Sylhet subdivision, one or two cases being found in each village. As stated by the Sanitary Commissioner, kalá-ázár, while no longer prevailing in a strongly epidemic form, occurs in chronic and less strongly marked cases, or in isolated cases of more acute type. Captain James found the disease prevalent in some parts of Sylhet, and cases to be of common occurrence in parts of Kamrup and Darrang. The difficulty of diagnosing the disease by Hospital Assistants is doubtless the reason for the small returns of deaths. Mr. Fuller looks to the more extensive use of quinine as a means of combating kalá-ázár and malarial fevers, and he has submitted to the Government of India a scheme for popularizing the use of the drug. The death-rate from diarrhoea and dysentery increased from 1·99 to 2·21, the mortality being heaviest in the Lakhimpur, Nowgong, and Sibsagar districts. The rate for the tea-garden population was three times as great as for the rest of the province, in every district except Nowgong. The recorded fever mortality among the garden population, on the other hand, was proportionately less. The

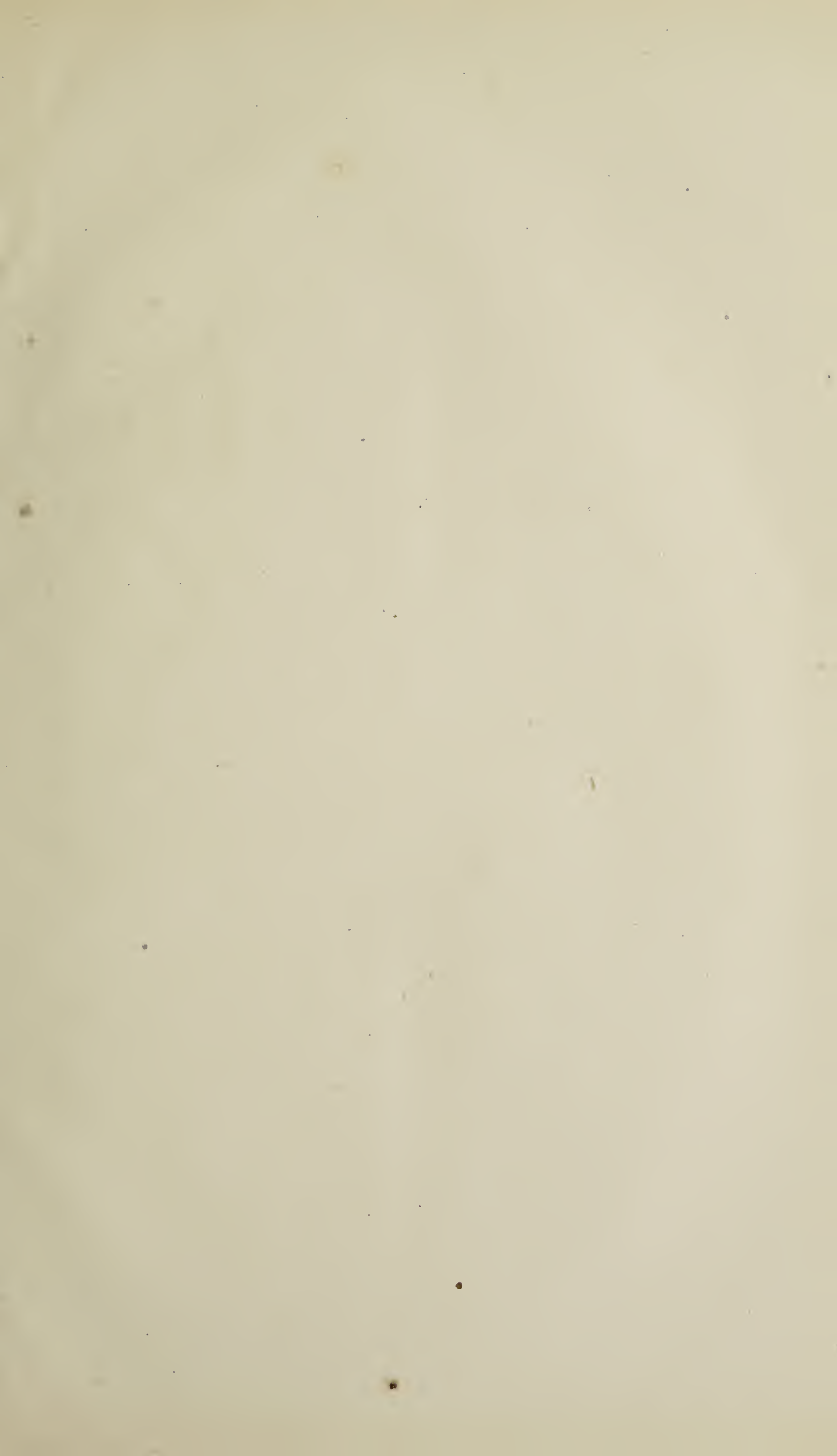
peculiar liability of tea-garden coolies to dysentery and diarrhœa is not improbably due to the complete change of diet they experience on coming to Assam, but incorrect diagnosis on the part of the registering agent is a factor which should not be overlooked.

5. The only sanitary work of importance taken up during the year was the new waterworks for the town of Gauhati. The Sylhet Municipality, which was given a loan of Rs. 10,000 for the sinking of wells, spent nearly Rs. 2,000 on this improvement. A reform of great importance, affecting the sanitation of this town, is the stoppage of the peculiar and objectionable practice, hitherto followed by the Musalman community, of burying the dead within their house compounds. The prohibition of this most insanitary custom has been delayed for many years by the unwillingness of the Municipal Committee to deal with a question upon which public feeling ran high, and the Chief Commissioner was obliged to make use of the special powers granted by Act III of 1897. A Musalman cemetery has been provided from public funds, and the people have acquiesced in the change. With the exception of Hailakandi, all municipal towns appear to have provided liberally for sanitary improvements, 44·25 per cent. of the total income having been spent under this head, against 43·62 in 1903. The total amount spent by Local Boards in improving water-supply was insufficient, and the Chief Commissioner desires that, generally, more liberal allotments be made for this purpose in future.

By order of the Chief Commissioner of Assam,

L. J. KERSHAW,

Offg. Secretary to the Chief Commissioner of Assam.



ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1904.

BY

COLONEL DAVID WILKIE, *M.B., I.M.S.*,
PRINCIPAL MEDICAL OFFICER AND SANITARY COMMISSIONER, ASSAM.



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